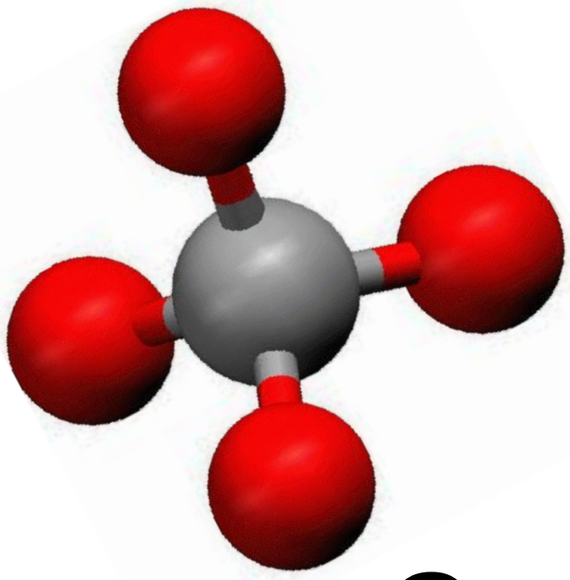
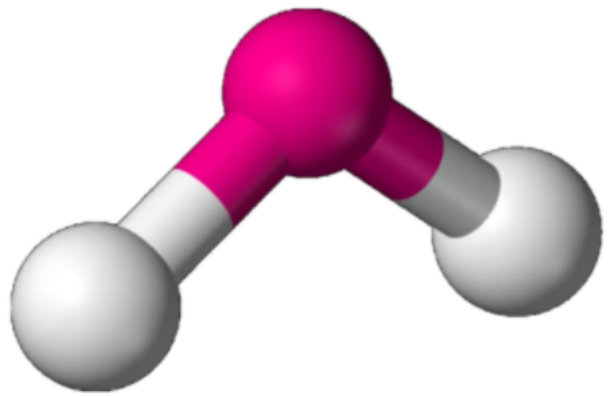
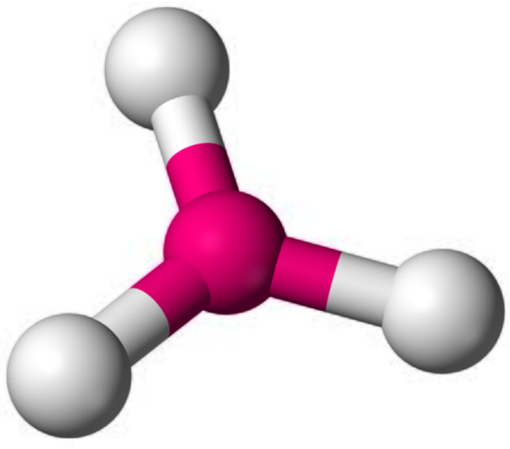
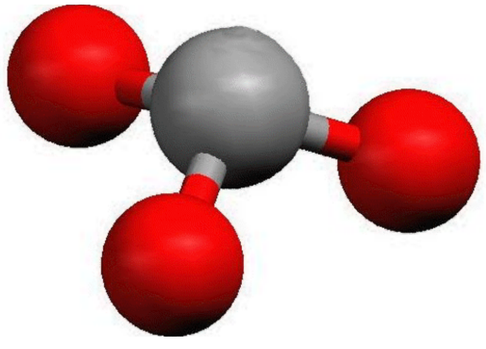


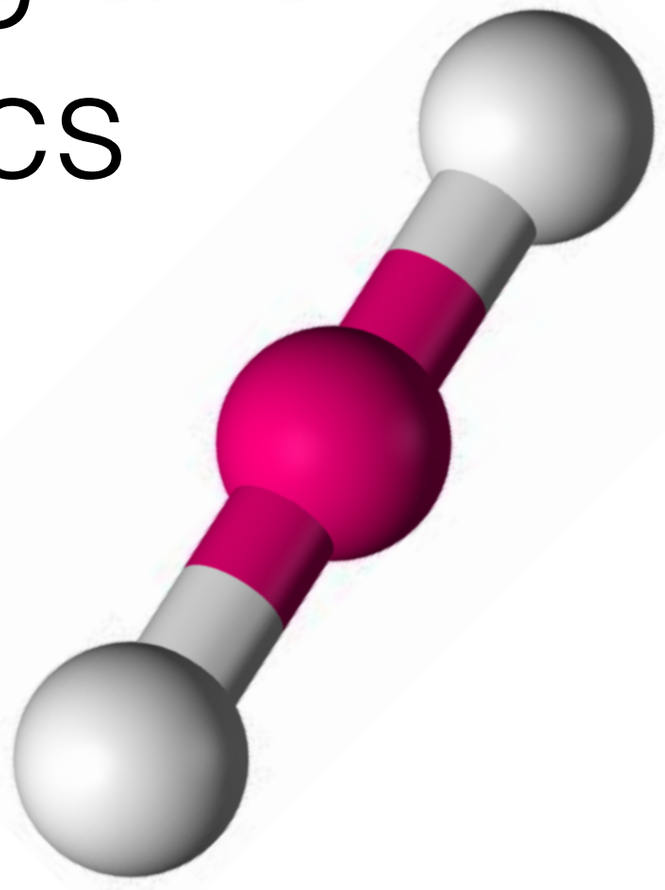


Chemistry 2.4 Structure, bonding and thermodynamics

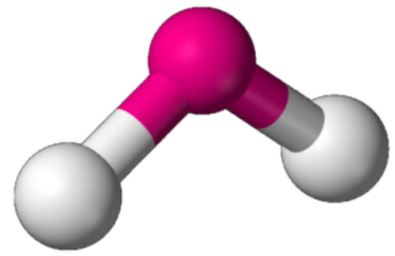
Molecular shapes





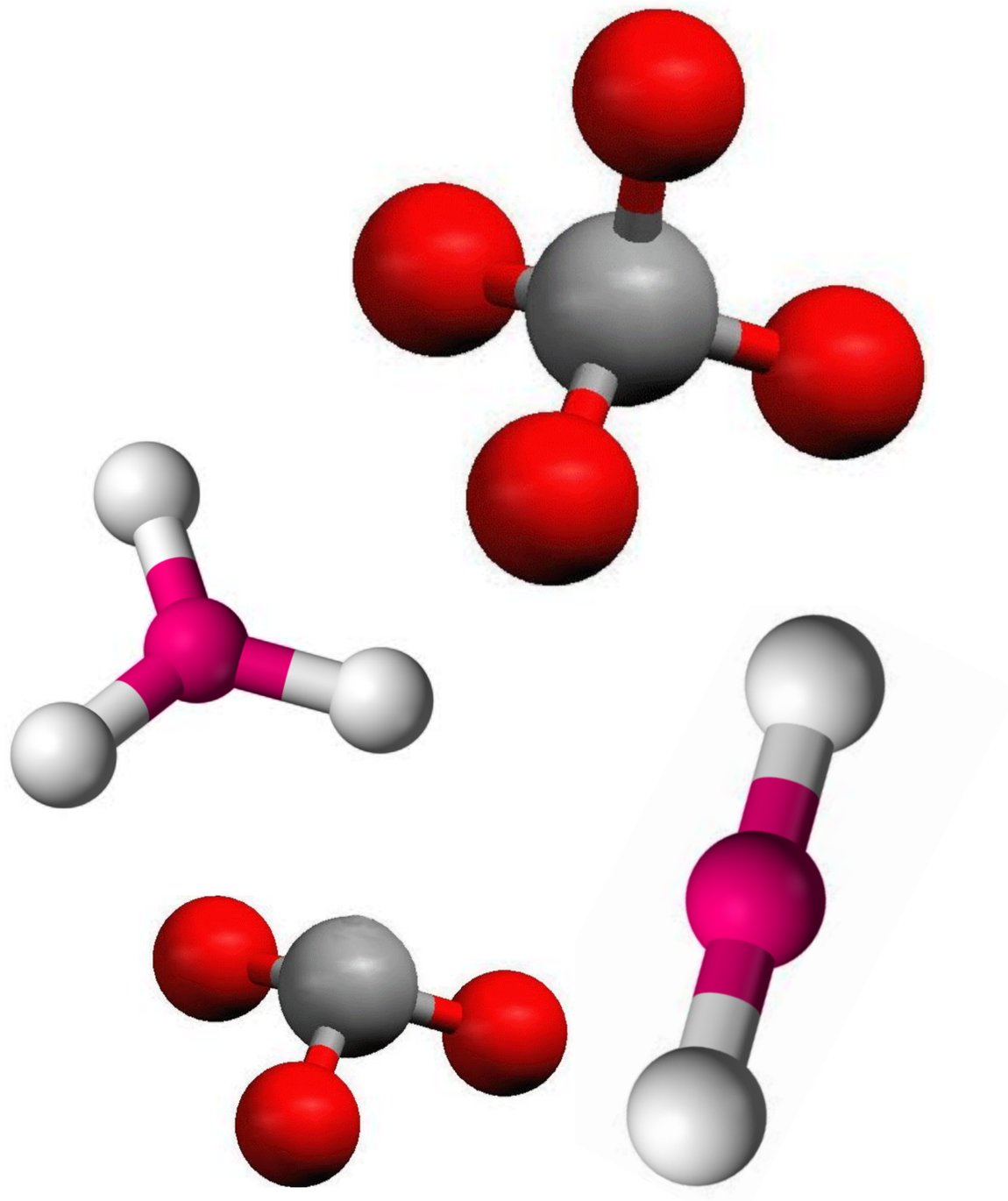


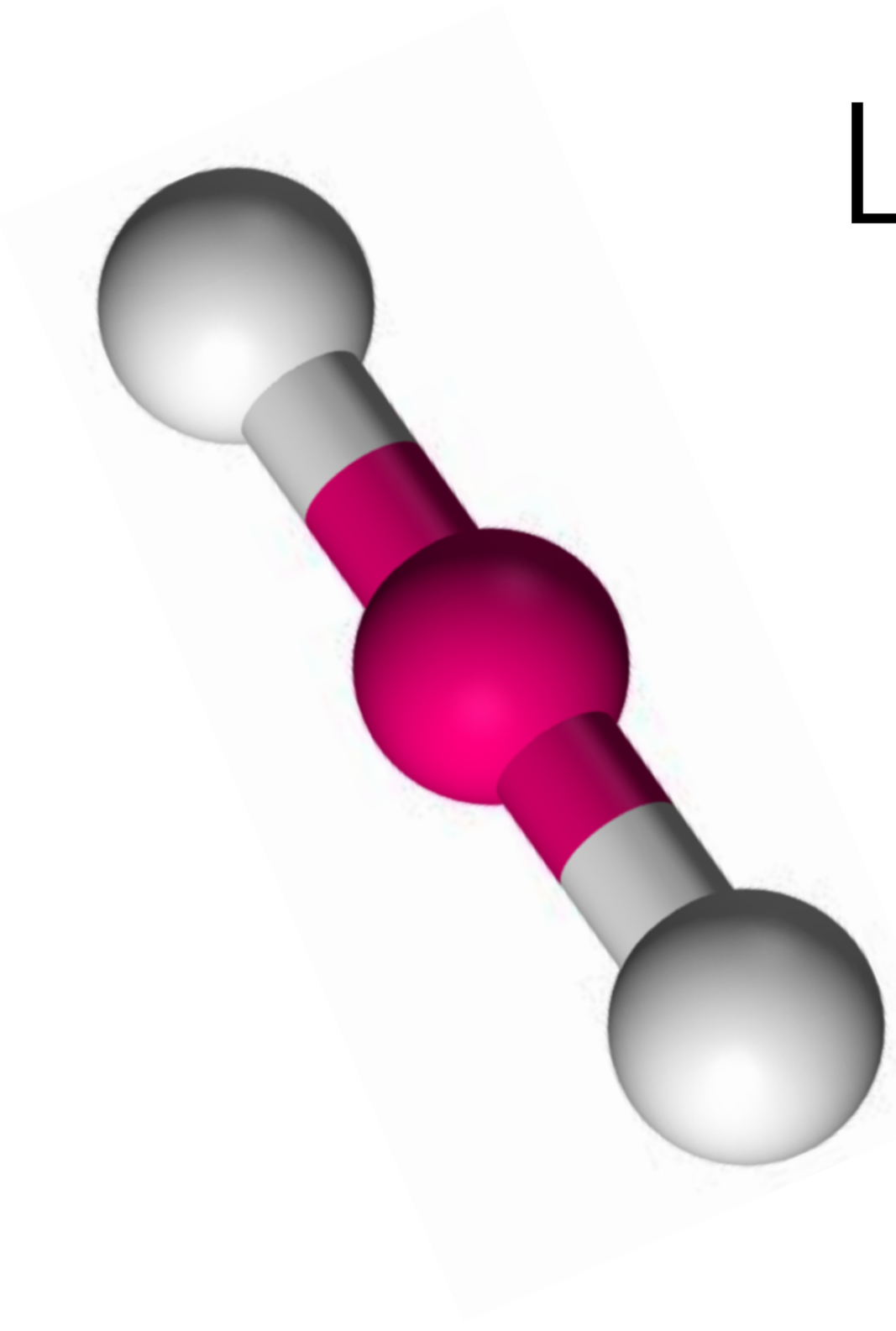
VSEPR Theory



- This is called "valence shell electron pair repulsion"
- Electron clouds are negatively charged
- They repel each other as far as possible in 3 dimensions
- Electron clouds could be

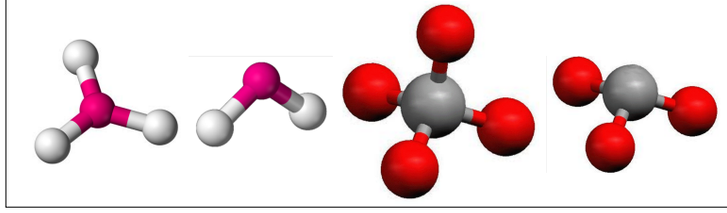
  Non-bonding electron pair
  Single bond
  Double bond
  Triple bond





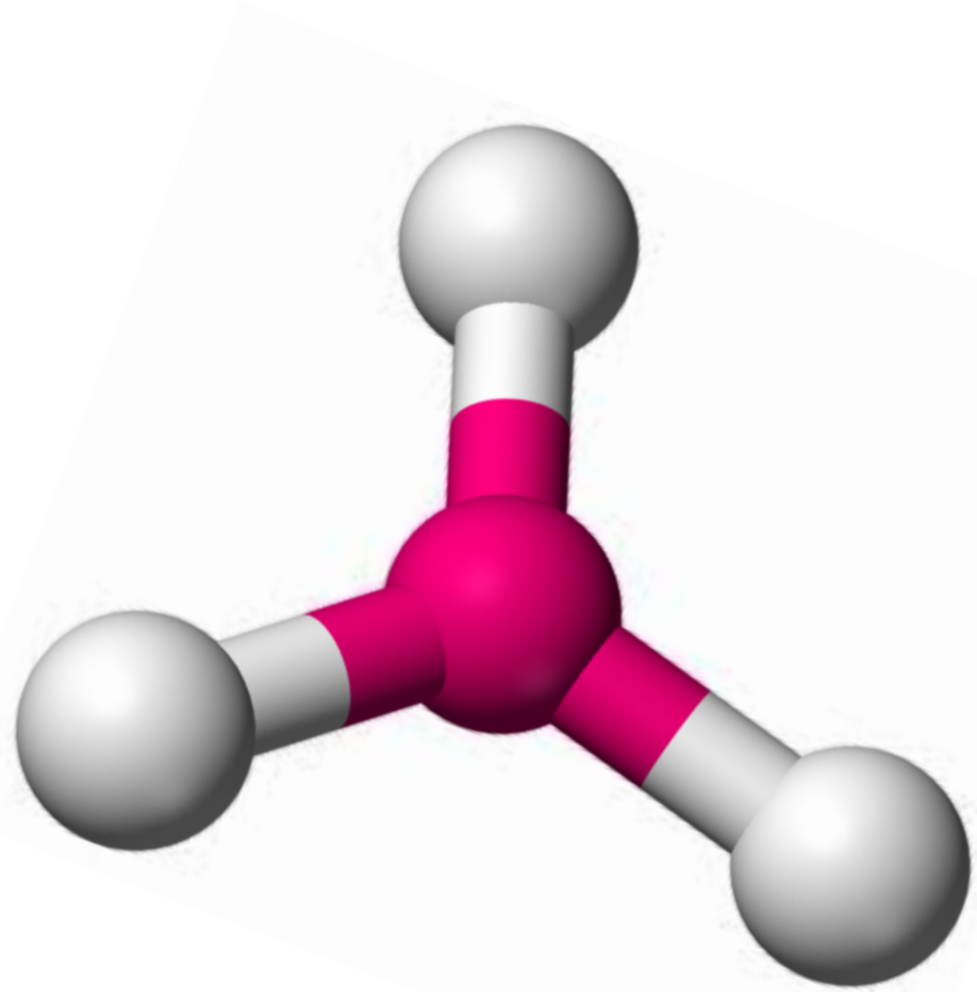
Linear

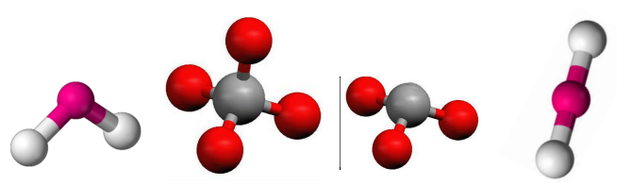
- Two electron clouds
- They repel each other as far as possible
- Two outer atoms- linear
- Bond angle 180
- Eg. Carbon dioxide



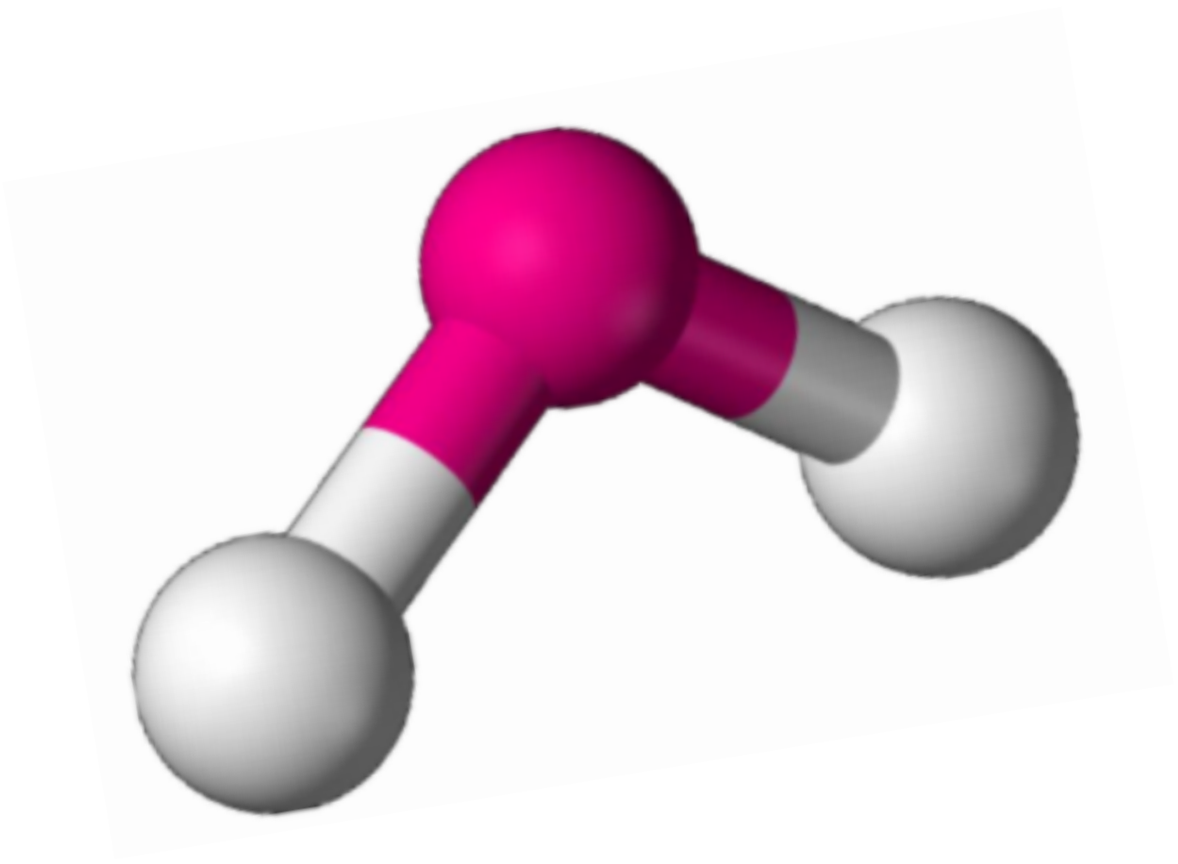
Trigonal planar

- Three electron clouds
- They repel each other as far as possible
- Three outer atoms- Trigonal planar
- Bond angle 120
- Eg. Sulfur trioxide

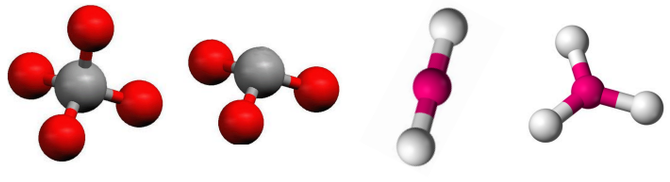




Bent 120

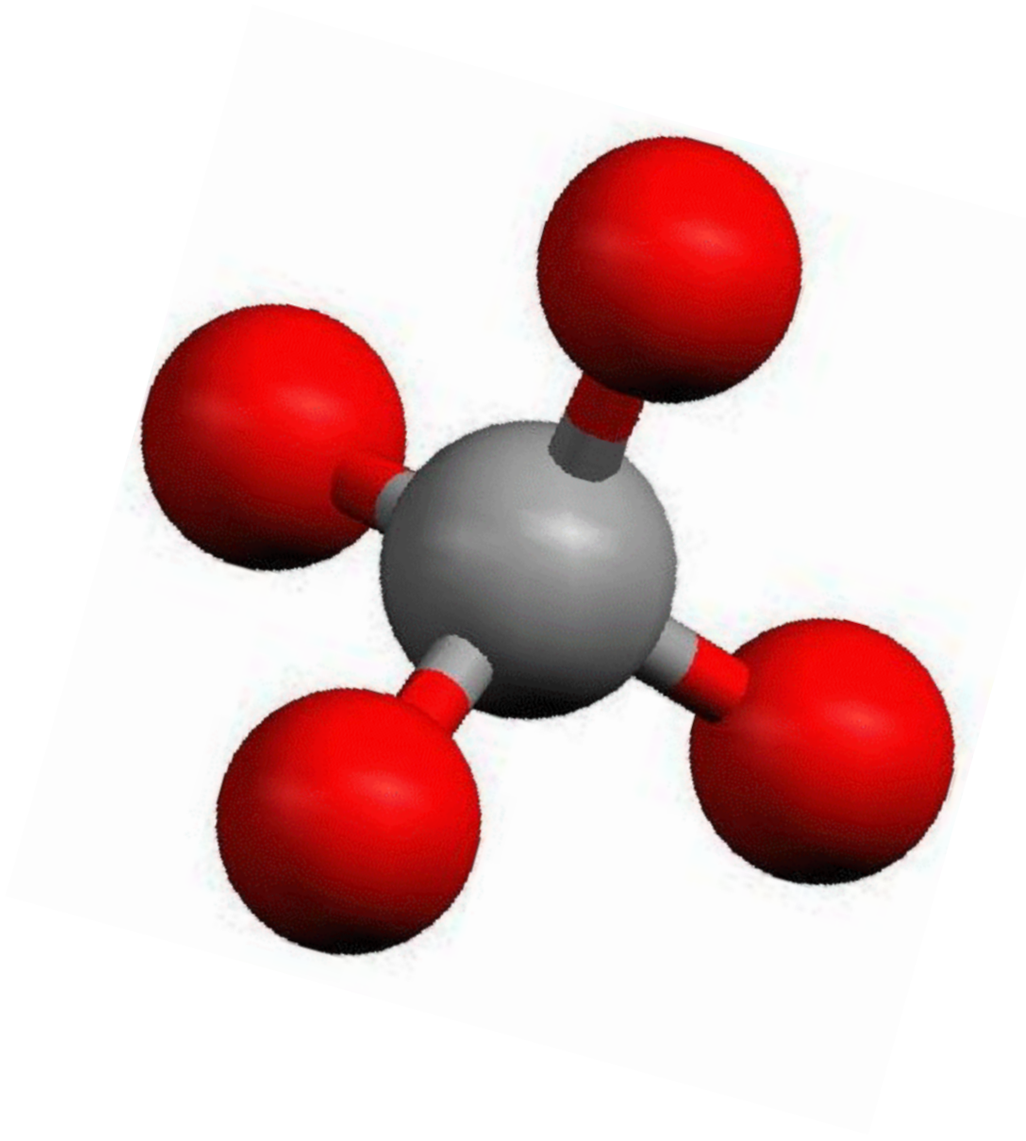


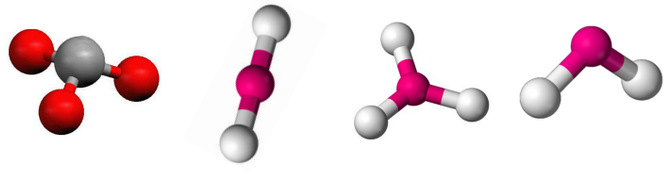
- Three electron clouds
- They repel each other as far as possible
- Two outer atoms- Bent
- Bond angle 120
- Eg. Sulfur dioxide



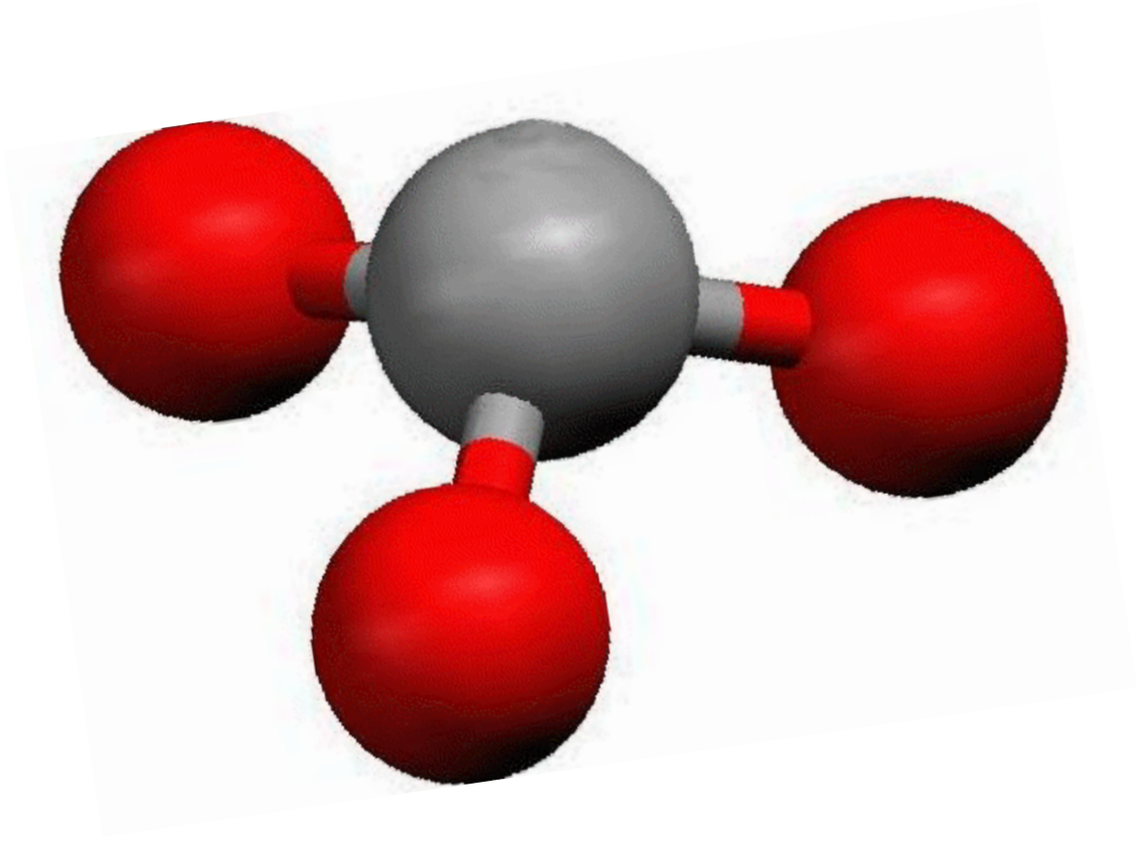
Tetrahedral

- Four electron clouds
- They repel each other as far as possible
- Four outer atoms- tetrahedral
- Bond angle- 109.5
- Eg. Methane

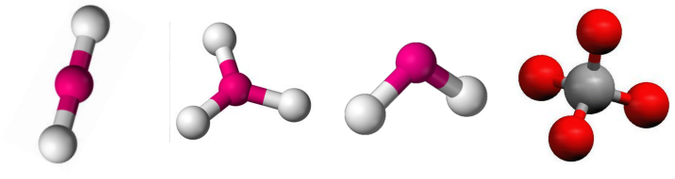




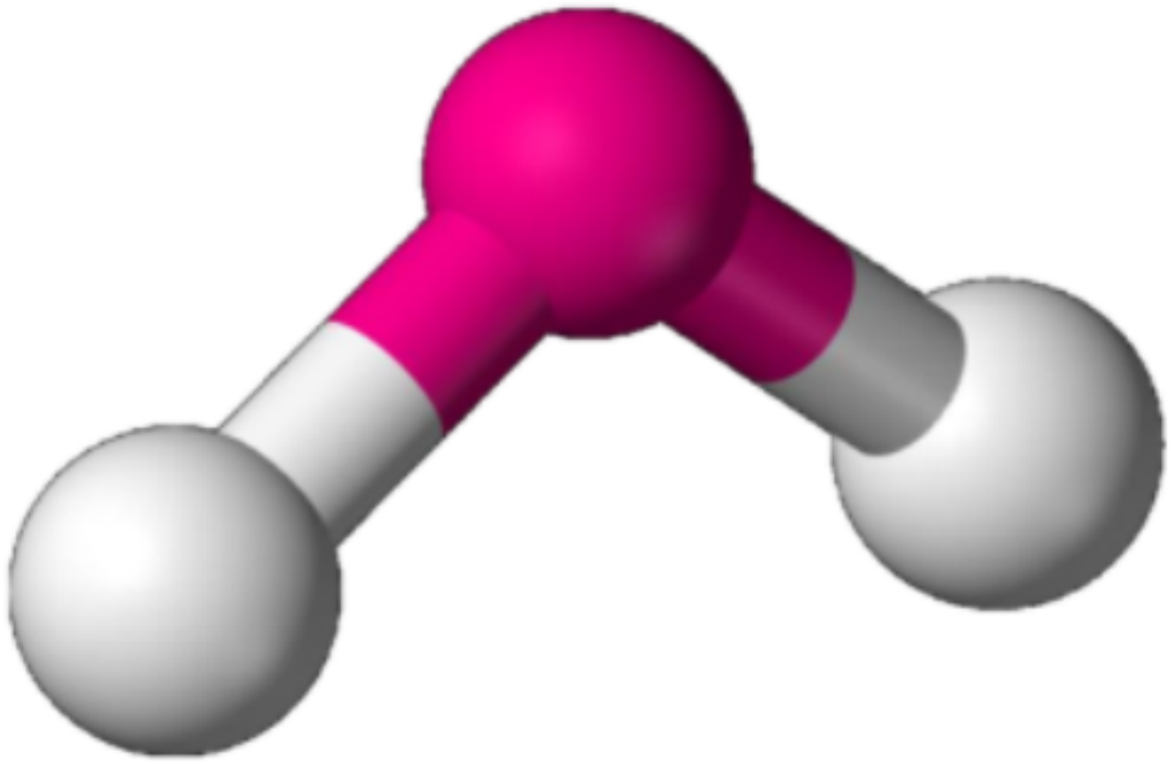
Trigonal Pyramidal



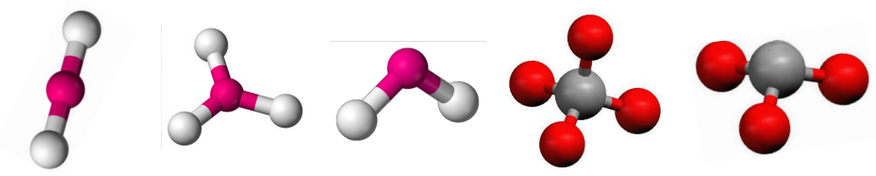
- Four electron clouds
- They repel each other as far as possible
- Three outer atoms- trigonal pyramidal
- Bond angle- 109.5
- Eg. Ammonia



Bent 109



- Four electron clouds
- They repel each other as far as possible
- Two outer atoms- bent
- Bond angle- 109.5
- Eg. Water



Beginning Chemistry

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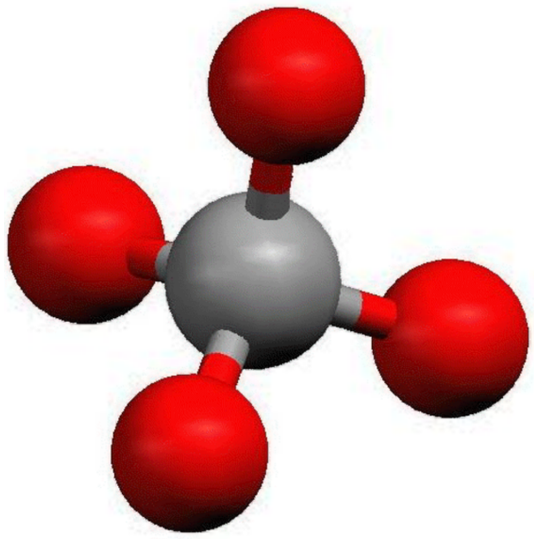
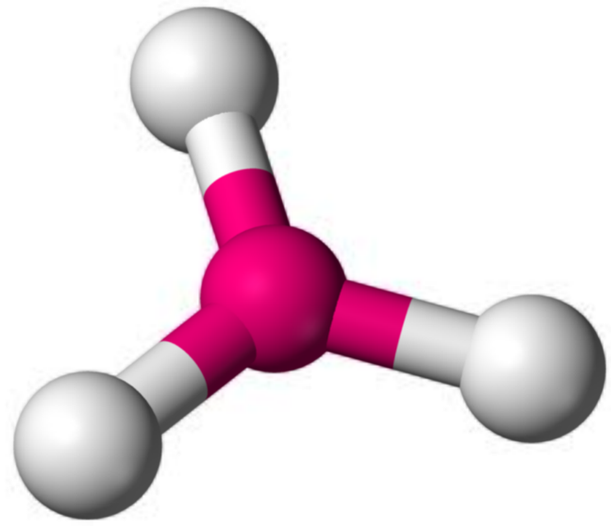
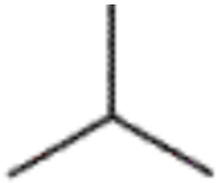
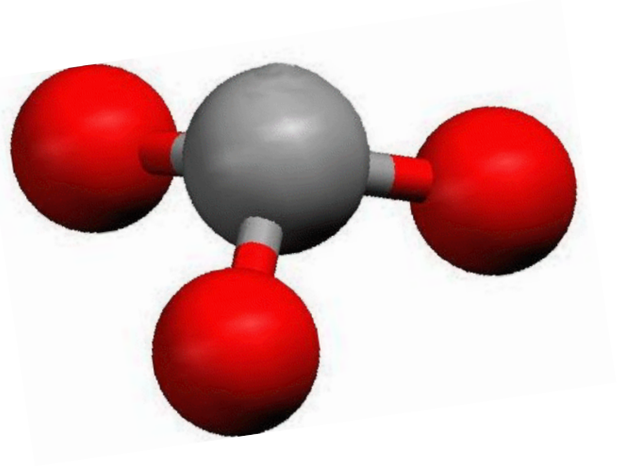


Tetrahedral





Triagonal
Planar



Pyramidal